



Evaluation Report CCMC 13169-R DMX AG

MasterFormat:	07 11 19.01
Evaluation issued:	2004-09-10
Re-evaluated:	2017-03-30
Re-evaluation due:	2019-09-10

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “DMX AG,” when used as a material for dampproofing below grade of concrete walls in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code (NBC) of Canada 2015:

- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Subsection 9.13.2., Dampproofing

This opinion is based on the CCMC evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 09-25-223 (13169-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2009-11-27 (revised on 2010-04-15) pursuant to s.29 of the *Building Code Act*, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

2. Description

The product is a black dimpled high-density polyethylene (HDPE) membrane with a flat tab on one side. The product is available in rolled sheets that are 0.68 mm thick, 20 m long and up to 2.4 m wide. When two sheets are joined side by side they must be overlapped by 200 mm to 300 mm with their dimples meshing. When two sheets are joined top to bottom they must be overlapped by 150 mm.

To ensure correct application, the product’s dampproofing system includes a range of accessories such as special trim strips, plugs and nails. Photos of the product are below (Figure 1 and 2).



Figure 1. Illustration of the product

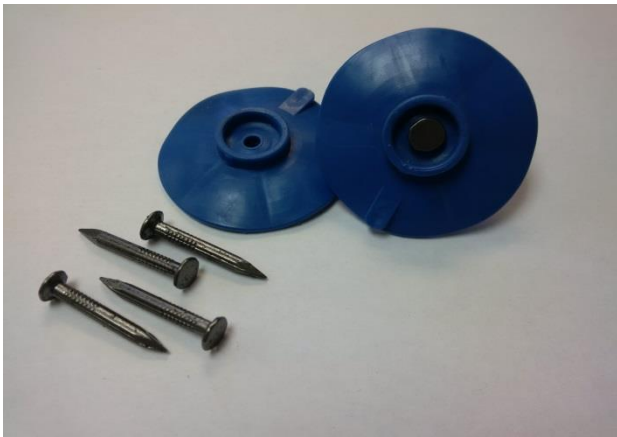


Figure 2. Illustration of the washer and anchor

3. Conditions and Limitations

The CCMC compliance opinion in Section 1 is bound by the “DMX AG” being used in accordance with the conditions and limitations set out below:

- Based on the evidence provided, the product has been classified as Type 2, which can be installed on a vertical wall up to a depth of 3.7 m. Application depths greater than 3.7 m are considered to be outside the scope of this Evaluation.
- The product must be installed in accordance with the manufacturer’s instructions (version 4.3, September 9, 2014).
- The product was evaluated for use against cast-in-place and concrete block foundation only and must cover the foundation wall from the top of the footing to the final grade.
- The product must be used in locations where the foundation wall is well drained in accordance with Subsection 9.14.2., Foundation Drainage, of Division B of the NBC 2015.
- The product is a dimpled membrane drainage system designed to act as a protective layer or a capillary breaking layer against the foundation wall to protect the wall from transient or intermittent water that may come in contact with the surface of the wall.
- The product must be protected from exposure to ultraviolet (UV) sunlight within a maximum of 30 days of its installation.
- Long-term performance of a drainage system will depend on local conditions such as the soil type, hydrogeology of the site, mineralogy and presence of microorganisms in the soil (i.e., iron ochre), as well as compatibility of the filter with the soil, among other issues. This Evaluation does not free the project from requiring proper engineering design of the drainage system.
- The top of the membrane and all vertical joints and terminations must be mechanically fastened and sealed to prevent soil particles from entering behind the membrane.
- Pattern and spacing of anchors must be designed considering site-specific issues such as the type of soil and how it will interact with the product, as well as the backfilling method used.
- The product has also been evaluated as a foundation drainage product and is included in the CCMC Registry under 13182-R.
- The product must be labelled with the manufacturer’s name or logo and the phrase “CCMC 13169-R.”

4. Technical Evidence

The Report Holder has submitted technical documentation for the CCMC evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Performance Requirements

4.1.1 Technical Evidence

Table 4.1.1.1 Results of Testing the Performance Requirements of the Product

Property		Unit	Requirement	Result
Compressive strength (initial)		kPa	150	214.2
Dynamic impact resistance (mean failure energy)		J	≥ 2.45	3.2
Creep resistance (residual thickness at 25 years/10°C)		%	≥ 40% at 25 years/10°C	60
Cold bending at -30°C		N/A	No visible crack	No visible crack
Tensile strength	at yield	kN/m	≥ 8	MD ¹ 8.7, XD 8.1
	elongation at break	%	≥ 25	MD 28.8, XD 25.2
Heat aging ⁽²⁾	dimensional change	%	≤ 1	MD -0.9, XD -0.9
	weight change	%	≤ -0.1	-0.2 ³
	residual compression strength	%	≥ 80 of initial	103.9
	creep resistance (residual thickness at 25 years/10°C)	%	≥ 40% at 25 years/10°C	78
Resistance to alkaline environment	appearance	N/A	No visible crack	No visible crack
	residual compression strength	%	≥ 80 of initial	107.5
	cold bending at -30°C	N/A	No cracks at room temperature	No visible crack
Geometrical properties	orientation of dimples	–	Report value	Square MD/XD
	number of dimples per unit area	Dimples/m ²	Report value	1 059
	overall thickness	mm	Report value	8.11
	sheet thickness	mm	Report value	0.68
	hollow core thickness	mm	≥ 5	7.62
Anchorage performance		kN/anchor	Report value	0.77

Notes to Table 4.1.1:

1. MD refers to the machine direction of the product; XD refers to cross direction of the product.
2. Aging of the samples is limited to 2 weeks if OIT > 5 minutes after 2 weeks, and extended to 8 weeks otherwise.
3. If the weight change is greater than 0.1%, an additional creep resistance test must be conducted and the residual thickness must be greater than 40% at 25 years/10°C.

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Date modified:

2017-05-03